

LEVEL OF INTERACTIVITY OF VIDEODISC INSTRUCTION ON COLLEGE STUDENTS' RECALL OF AIDS INFORMATION

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Experiment 1 confirmed the greater effectiveness of constructed-response interactive videodisc instruction when compared to a click-to-continue or passive viewing formats on posttest recall of AIDS information by 101 college students. Experiment 2 extended the analysis using a counterbalanced (ABAB-BABA) intrasubject design with 4 students in each of three ability groups. The necessity of constructing answers appears to be an important factor in the effectiveness of instructional programs.

DESCRIPTORS: videodisc, interactive instruction, constructed response, computer instruction

Computer-interactive videodisc technology is now widely available, and promising results have been obtained (Fletcher, 1990; Hannafin, 1985). Unfortunately, *interactivity* often refers to the capabilities of hardware and software systems rather than the behavior of the learner (Sales, 1989). The term *interactive* does not clearly imply the nature of the instructional contingencies and the student behavior required.

The facilitative effects of requiring "constructed" responses have been recently shown (Thomas & Bostow, 1991; Tudor & Bostow, 1991). Instructional contingencies that required the construction of missing key words, with the consequence of having to repeat if incorrect, produced significantly better posttest recall. The present research systematically replicated previous research and extended the analysis by using both a group and a single-subject design and assessed its generality to different ability levels.

EXPERIMENT 1: One-hundred eleven undergraduate students chose to participate. The videodisc lab contained four laserdisc stations and Macintosh® computers. Side 1 (29 min) of the AIDS InterActive Videodisc was divided into 40 segments and was then cast into the three experimental versions. In the constructed-response condition, a fill-in-the-blank item appeared on the computer screen after each video segment. If initially correct, "correct" appeared and the student advanced. A first incorrect response resulted in video replay. A second error displayed "incorrect" and presented the correct answer without a video replay. Each item used language similar to that of the video/audio content. In the click-to-continue condition, video segments were followed by the above items with the blanks filled in without emphasis. The student could optionally advance or replay. In the passive-observation condition, segments occurred one after the other without noticeable breaks, appearing as a 29-min linear documentary. Posttest 1 and delayed Posttest 2 contained the same 40 items used in the constructed-response condition. Internal consistency reliability, measured by the Kuder-Richardson 20, was .86 for Posttest 1 and .61 for Posttest 2.

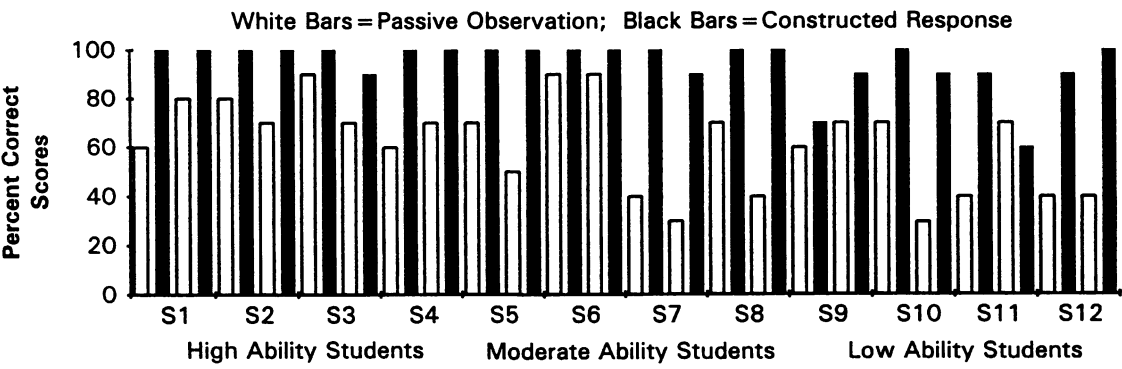
Students were ranked based upon their course quiz averages and separated into high-, middle-, and low-ability groups. (The 4 highest, middle, and lowest performing students were withdrawn and set aside for participation in Experiment 2.) Students were randomly assigned to the three conditions. Posttest 1 was administered immediately; Posttest 2 was administered 5 weeks later.

Analysis of variance and pairwise post hoc comparisons indicated that the three groups were significantly different from each other at Posttest 1 ($p < .05$); the constructed-response group had the highest mean score ($M = 92$, $SD = 7$), followed by the click-to-continue ($M = 71$, $SD = 12$) and passive-observation ($M = 59$, $SD = 12$) groups. At Posttest 2, differences among the constructed-response, click-to-continue, and passive-observation groups were not as pronounced ($M = 71$, $SD = 12$; $M = 63$, $SD = 11$; $M = 58$, $SD = 10$, respectively). Results for the constructed-response group were significantly different from the click-to-continue and passive-observation groups, but results for the click-to-continue and passive-observation groups were not significantly different.

EXPERIMENT 2: We used a counterbalanced reversal design for within-student comparisons of the passive-observation and constructed-response conditions with 4 students from each ability group who did not participate in Experiment 1. Each histogram in the figure represents that student's percentage correct performance on the subset of 10 fill-in-the-blank posttest items. The reversal pattern obtained with 9 of the 12 students corroborate the relative effectiveness of the constructed-response intervention revealed in Experiment 1. Although performance declined from high- to low-ability groups, high and low achievers were similarly differentially responsive to the types of instruction. Results of Posttest 2 were similar to those of Posttest 1, although overall performance was poorer.

To minimize the effects of differences in student histories, we composed test items that closely approximated videotaped verbal stimuli and required little or no interpretation. Test performance was intraverbal and, therefore, particularly likely to decline with the passage of time. Performance fell from the first posttest to the second, presumably due to intervening events. That decrement, however, appears to call for continuing instruction that maintains behavior strength while bringing it under other types of functional control. Generalization to other verbal and nonverbal relations could not be evaluated due to course and time constraints. The present research was a first step in the search for concurrently established (especially practical) functional relations.

Supplying missing words in frames required students to read more slowly, carefully, and to reread frames. Time taken was, therefore, another relevant difference induced by experimental conditions. Results confirm that active construction



promotes recall, and evidence indicates that programmed instruction is appropriate for all student ability levels. What students do during the extra time taken is where we must eventually look to find the reasons for the apparently superior effectiveness of constructed-interactive programmed instruction.

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